PATENT CLAIMS

1. Etching medium for the etching of silicon surfaces and layers, characterised in that
the etching medium is a thickened, alkaline liquid.

2. Printable etching medium according to Claim 1, characterised in that it is an etching paste which comprises
a. at least one solvent
b. thickeners and optionally
c. additives, such as antifoams, thixotropic agents, flow-control agents, deaerators and adhesion promoters,
and is effective at temperatures as low as from 70 to 150°C and/or can, if desired, be activated by the input of energy.

3. Etching medium according to Claims 1 and 2, characterised in that it comprises, as etching component, an organic or inorganic base in a concentration of from 2 to 50% by weight, preferably from 5 to 48% by weight, based on the total amount.

4. Etching medium according to Claim 3, characterised in that it comprises, as etching component, at least one component selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonia, ethanolamine, ethylenediamine, tetraalkylammonium hydroxide or one of the ethylenediamine/pyrocatechol and ethanolamine/gallic acid mixtures.

5. Etching medium according to Claim 2, characterised in that it a solvent selected from the group consisting of water, isopropanol, diethylene glycol, dipropylene glycol, polyethylene glycols, 1,2-propanediol, 1,4-butanediol, 1,3-butanediol, glycerol, 1,5 pentanediol, 2-ethyl-1-hexanol or mixtures thereof, or selected from the group consisting of acetophenone, methyl-2-hexanone, 2-octanone, 4-hydroxy-4-methyl-2-pentanone, 1-methyl-2-pyrrolidone, ethylene glycol monobutyl ether, ethylene glycol monomethyl ether, triethylene glycol monomethyl ether, di-

ethylene glycol monobutyl ether, dipropylene glycol monomethyl ether, carboxylic acid esters, such as [2,2-butoxy(ethoxy)]ethyl acetate, propylene carbonate as such or in a mixture in an amount of from 10 to 90% by weight, preferably in an amount of from 15 to 85% by weight, based on the total amount of the medium.

6. Etching medium according to Claim 2, characterised in that it comprises a thickener selected from the group consisting of hydroxyalkylguar, xanthan gum, cellulose and/or ethyl-, hydroxypropyl- or hydroxyethylcellulose, carboxymethylcellulose, sodium carboxymethylhydroxyethylcellulose, homopolymers or copolymers based on functionalised vinyl units of acrylic acid, acrylates and alkyl methacrylates (C_{10}-C_{30}), individually or in a mixture in an amount of from 0.5 to 25% by weight, preferably from 1 to 10% by weight, based on the total amount of the etching medium.

7. Etching medium according to Claim 3, characterised in that it comprises additives selected from the group consisting of antifoams, thixotropic agents, flow-control agents, deaerators and adhesion promoters in an amount of from 0 to 2% by weight, based on the total amount.

8. Process for the etching of silicon surfaces and layers, characterised in that an etching medium according to Claims 1-7 is applied over the entire area or in accordance with the etch structure mask specifically only to the areas of the surface where etching is desired and is removed again after an exposure time of from 30 s to 5 min.

9. Process according to Claim 8, characterised in that the etching medium acts at a temperature in the range from 70 to 150°C and/or, if necessary, is activated by the input of energy.

10. Process according to Claim 9, characterised in that the etching medium is activated by exposure to heat (IR lamp, hotplate).

11. Process according to Claim 8, characterised in that the etching medium is applied to the surface to be etched by a screen, template, pad, stamp, ink-jet or manual printing process or by a dispensing technique.

12. Process according to Claim 8, characterised in that the etching medium is rinsed off using a solvent or solvent mixture when the etching is complete.

13. Use of an etching medium according to Claims 1-7 in photovoltaics, semiconductor technology, high-performance electronics and for the production of photodiodes, circuits, electronic components.

14. Use of an etching medium according to Claims 1-7 for the etching of silicon surfaces and layers for isolation of the p-n transition in solar cells.

15. Use of an etching medium according to Claims 1-7 for the etching of silicon surfaces and layers for the production of a selective emitter for solar cells.

16. Use of an etching medium according to Claims 1-7 for the etching of silicon surfaces and layers of solar cells for improving the antireflection behaviour.

17. Use of an etching medium according to Claims 1-7 for the etching of silicon surfaces and layers in a process for the production of semiconductor components and circuits thereof.

18. Use of an etching medium according to Claims 1-7 for the etching of silicon surfaces and layers in a process for the production of components in high-performance electronics.